**Breaking Down the Steps of Photosynthesis**

Ms. Ottolini, AP Biology

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| **Process** | **Overall Description**  (including reactants, products, and enzymes or structures used) | **Location in Chloroplast** | **ATP Produced or Used** | **Electron Carriers Produced or Used** | **What is Oxidized?** | **What is Reduced?** |
| **The Light Reactions** | -Chlorophyll absorbs sunlight and donates electrons to two electron transport chains (ETC’s) located after photosystems II and I  -Water is split to replace e- from chlorophyll, and O2 is released  -ETC’s 🡪 ATP  -Final e- acceptor = NADP+ | Thylakoid membrane | Produced | NADPH produced (NADP+ and e- 🡪 NADPH) | Chlorophyll (and H2O to replace e- lost from chlorophyll) | NADP+ |
| **The Calvin Cycle** | -Energy from ATP and e- carried by NADPH is used to convert CO2 into 3-carbon molecules (PGAL), which can be joined to make glucose  -Process is called carbon fixation, and an important enzyme used is Rubisco | Stroma | Used | NADPH used (remove e- 🡪 NADP+) | NADPH | CO2 (add e- and some H+ 🡪 PGAL and later… glucose) |